

REMARKS

This response is intended to be fully responsive to the Examiner's Office Action mailed October 5, 2009. Claim 35 is amended to make it clear that the audiofrequency actuator is attached directly to the face pane surface of the glass of the window. Support for this amendment may be found in Figure 3 and the description thereof, which makes it clear that the actuator is attached to the surface of the glass pane, and not to an edge.

The Applicants present the following arguments.

Claim Rejections – 35 USC § 102

The Examiner has reverted to Allaei (US 6, 957, 516) as the basis for his rejection under 35 U.S.C. 102, and sets out his analysis of Claim 35 in relation to Allaei. With due respect for the Examiner's expertise, Applicants submit that the analysis is incorrect.

To assist in our explanation, the Applicants have set out a table comparing the wording of Claim 35 to the teachings of Allaei:

Claim 35	Allaei teaching
A noise control device for a glass window in a building	A method for controlling vibration in a window (see, for example, Claim 1)
comprising an audio frequency sensor attachable to a face pane surface of said window interior of outer edge of said window	Sensor is mounted between the edge of the glass and the frame in which the glass is mounted – see Col 2, lines 24-26, and the Figures. For example, Figure 10, as referred to by the Examiner (col. 6, line 58 through col. 7, line 33) clearly shows the sensor as being mounted between an edge of the glass pane 110 and the frame 130, not on the face of the pane .
an encoder interface adapted to receive signals from said audio frequency sensor	Controller in Figure 10
said encoder interface including processing means for detecting in a received signal a predetermined characteristic of noise	<i>"Controller 1010 receives signals (for example sensed voltage V_{sense}) from vibration sensor 1020 indicative of</i>

<p>external to said building, for generating a cancellation signal and for supplying said cancellation signal to an audiofrequency actuator directly attached to the face plane surface of the glass of the window</p>	<p><i>vibrations adjacent periphery 140 of the windowpane 110 transmitted to vibration sensor 1020. Controller 1010 generates and transmits signals to impedance discontinuity elements 1062 and/or 1064, e.g., a control voltage V_c for a piezoelectric actuator or a control current I_c for a SMA actuator, to adjust the impedance between the windowpane 110 and frame 130.</i>" (Col. 7, lines 8-16).</p> <p>There is no teaching of detecting a predetermined characteristic of noise external to the building, nor of generating a cancellation signal to this noise. Furthermore, the actuator is not attached to a face pan surface of the glass of the window, but is instead mounted between the side edge of the pane and the surrounding frame.</p>
<p>and adapted to couple said signal into the glass in the plane of said face pane surface to cause the glass to radiate the acoustic antiphase signal into the building to reduce the perceived intensity of the external noise in the building</p>	<p>The audiofrequency actuator is not adapted to couple the signal in the plane of said face plane surface to radiate the acoustic antiphase signal into the building. Instead, the actuator acts as a dynamically controlled version of the springs or other impedance discontinuity elements taught by Allaei. The actuator is adapted to reduce vibration in the window; it does not cause the windowpane to radiate a cancellation signal into the room.</p>

It will thus be seen that there are significant differences between what is claimed in Claim 35 and what Allaei teaches:

- The present invention provides a system which detects certain predetermined noise characteristics external to the building, and radiates into the building an acoustic antiphase signal to reduce the perceived intensity of the external noise in the building. By contrast, Allaei detects vibrations in the plane of the glass between the side edge of the glass and the frame and then generates a signal to control an actuator also placed between the glass side edge and the frame so as to control the impedance discontinuity at the periphery of the windowpane. The intention is to reduce vibration in the windowpane, rather than to radiate an antiphase signal into the room.
- Accordingly, the present invention places both the sensor and the actuator on the face pane surface of the windowpane, interior of the outer edge of the windowpane, rather than on the outer edge.

It is therefore respectfully submitted that Claim 35 as amended is clearly distinguishable over Allaei.

Re Claims 38 and 39, Allaei does not detect a predetermined characteristic of external sound, but instead simply senses vibrations between the glass pane and the frame.

Claim Rejections – 35 USC § 103

The Examiner has rejected Claim 36 under 35 U.S.C. 103(a) as being unpatentable over Allaei, US Patent 6957516 B2 in view of Pelrine et al, US Patent 6343129 B1.

Pelrine teaches a loudspeaker formed as a series of tiles 12 of electrostrictive polymer acoustic actuators, each of which is provided with a microphone facing a noise source. The input from the microphones can be processed to provide noise-cancellation signals to the tiles. There is no teaching concerning where the microphone is located relative to the tile, and there is certainly no teaching that the microphone and the acoustic actuator are combined into a single device as required by Applicants' Claim 36.

Since Allaei does not teach the attachment of an actuator to the surface of a window to drive the face of the windowpane to radiate an antiphase acoustic signal into the building to cancel the external sound entering the building, and Pelrine does not teach combining a microphone and an acoustic actuator *into a single device*, the invention claimed in Claim 36 would not have been obvious.

Claim 37 is rejected as being unpatentable of Allaei and Pelrine, as applied to Claim 36, in view of Wan, UK Patent 5,978,489. Wan simply makes mention of transducers which "might include piezoelectric ceramics and magnetostrictive actuators. The Applicants do not dispute that magnetostrictive actuators are known *per se*. However, since Claim 36 relates to a novel and non-obvious combination, there is no reason why the skilled person being aware of Allaei, Pelrine and Wan would inevitably arrive at the invention claimed in Claim 37. Claim 37 is therefore, Applicants submit, patentable over these combined teachings.

Having noted and carefully addressed all of the outstanding rejections, Applicants ask the Examiner to reconsider the claims in the light of the amendment and arguments presented, and request that a Notice of Allowance be issued.

Respectfully submitted,

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